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AUTHOR Ringelheim, Daniel; And Others
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ABSTRACT

Examined were relationships among various verbal and nonverbal personality scales purporting to measure extent to which an individual behaves as if he, or the environment, controls events. Also investigated were developmental trends related to this internal-external dimension of personality and its relation to academic achievement of the educable mentally retarded (EMR). Subjects were 215 EMR children (ages 9-15 years, IQ range 45-82), who were administered a battery of six tests. The hypotheses that there would be a significant relationship among the personality measures at all age levels across settings, and that there would be a developmental trend across the age span involved, moving from an external to internal frame of reference as age increased, were not sustained. It was concluded that internal and external dimensions of personality play a minimal role in the academic achievement of EMR students as compared to the roles played by MA and CA. (See ED 038 779, EC 003 339 for project interim report.) (Author/KW)

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THE RELATIONSHIP AMONG VARIOUS DICHOTOMOUS DESCRIPTIVE PERSONALITY SCALES AND ACHIEVEMENT IN THE MENTALLY RETARDED: A STUDY OF THE RELEVANT FACTORS INFLUENCING ACADEMIC ACHIEVEMENT AT VARIOUS CHRONOLOGICAL AGE LEVELS

Daniel Ringelheim, Ph.D.
Irving Bialer, Ph.D.
Hatice Morrissey

School of Education
New York University
Washington Square
New York, New York

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SUMMARY

The present study set out to examine the relationships among a variety of both verbal and nonverbal personality scales which purport to measure the extent to which an individual behaves as if he, or the environment, exercises control over the outcome of events. The study further investigated the developmental trends involved in this internal-external dimension of personality and its relation to academic achievement among educable retardates.

The subjects were 215 EMR children ranging in age from 9 to 15 years and drawn from public school, parochial school and institutional settings. Subjects ranged in IQ from 45 to 82 and in MA 4-1 to 12-0.

It was hypothesized that: (a) there would be a significant relationship among the various personality measures at all age levels across settings; and (b) that there would be a developmental trend across the age span involved, moving from an external to an internal frame of reference with age increasing.

All subjects were administered a battery of tests consisting of (a) a modification of the Intellectual Achievement Responsibility Questionnaire, (b) The Children's Picture Test of Internal-External Control, (c) Children's Imbedded Figures Test, (d) Rosenzweig Children's Picture-Frustration Study, (e) Bialer-Cromwell Children's Locus of Control Scale, and (f) the Wide Range Achievement Test, 1965 Revision.

The hypotheses were not sustained. The major conclusion reached was that internal and external dimensions of personality play a minimal role in academic achievement as compared to that played by MA and CA among our retarded Ss.

INTRODUCTION

In their evaluation of behavioral and social research, the President's Panel on Mental Retardation suggested that the use of concepts presently available for the study of personality development in normal persons would be a fruitful approach for exploring variables related to such development in the mentally retarded. It was further suggested that the process of systematic diagnosis of the retarded might well be approached by information gathered through a battery of instruments which yielded data on hitherto relatively unexplored personality dimensions.

In recent years, the literature has reported a number of dichotomous descriptive personality scales all of which seem to have a basic communality with regard to the dimensions of personality which they purport to measure. In effect, all the reported instruments apparently evaluate the extent to which the individual is self-motivated, directed, or controlled (internal frame of reference) or the extent to which the environment exercises major influence on his behavior (external frame of reference). Thus, the Rosenzweig Picture-Frustration Study (RP-F--Rosenzweig et al, 1948) gauges intropunitive vs. extropunitive responses to frustrating events, while the Children's Locus of Control Scale (CLC--Bialer, 1960, 1961), the Children's Picture Test (CPT--Battle and Rotter, 1963), and the Intellectual Achievement Responsibility Questionnaire (IARQ--Crandall et al, 1965) were designed to measure the extent to which various event outcomes are conceptualized as being under internal vs. external control. In a related dimension, the Children's Embedded Figures Test (CEFT--Karp and Konstadt, 1963) is designed to explore the field dependence vs. field independence construct (Witkin et al, 1954) as demonstrated in the perceptual behavior of children.

The RP-F, CLC and CEFT have heretofore been used with subject populations including both normal and retarded children. However, to date, the CPT and IARQ have been administered only to normal subjects. Nevertheless, implicit in all the findings is a developmental trend from an external to an internal orientation with increasing age. In addition, Lefcourt (1966) in a major review of research on internal vs. external control of reinforcements has concluded that the internal-external dimension predicts to different social behaviors, learning performance, and achievement-related activities. However, no significant efforts have been made to correlate the various instruments delineated above with each other in order to determine the extent to which they may

measure the same behavior and, further, whether as a group they can supply meaningful information relevant to the educational characteristics and curriculum needs of the mentally retarded. Also, no attempt has been made to relate the developmental aspects of the internal-external orientation to academic achievement.

The objectives of the present study were: (a) to examine the response characteristics of educable mentally retarded children on the above dichotomous descriptive personality scales; (b) to study the relationships among those scales to each other and to academic achievements at various chronological age (CA) levels in retarded students; (c) to isolate, if possible, the common personality dimensions of the given scales at the various CA levels in retarded subjects; and (d) to examine the developmental trends of the given personality characteristics in educable retardates and to compare these trends with normal group data where available. As a supplement to the empirical aspects of the preceding objectives, the following general hypotheses were advanced: (a) there is a significant relationship between the various personality scales at all CA levels under consideration; and (b) there is a developmental trend across the CA range represented by the sample such that responses tend to move toward an increasingly greater <u>internal</u> frame of reference with increasing age.

METHOD

Subjects

The total subject population consisted of 215 Educable Mentally Retarded (EMR) children drawn from public, parochial, and institutional settings at chronological age (CA) levels 9, 11, 13 and 15 years. For purposes of this study, a given CA level included a period of approximately 6 months above and below the given age level. For example, CA 9 covered the range of 8-6 to 9-5. The total sample ranged in IQ from 45 to 82, in CA from 8-6 to 15-5, and in MA from 4-1 to 12-0.

It should be noted that data for the 7 year age group originally projected for the study have not been included in this report. This segment was excluded on the basis of pilot study findings which indicated that the cognitive and verbal requirements of the various personality scales were not within the intellectual capabilities of this age group. In addition, 7 year old EMR Ss were difficult to find in the public and parochial schools, and they were almost nonexistent in the institutions which cooperated in this project.

Subjects were included in the study only if they met the following criteria: (a) IQ scores within the approximate range of 50 to 75; (b) no severe emotional problems or physical disabilities were noted on the school or institutional records; and (c) English was the dominant language spoken in the home or by the subject.

The public school subgroup (PS) was composed of 120 children (30 at each of the CA levels 9, 11, 13 and 15) drawn from special classes for the educable mentally retarded in the New York City public schools. The PS sample ranged in IQ from 50 to 77, in CA from 8-6 to 15-5, and in MA from 4-9 to 12-0. The parochial school subgroup (PAR) consisted of 45 EMR Ss (15 at each of the CA levels 9, 11, and 13) drawn from special classes under the jurisdiction of the Catholic Archdiocese of New York. This subgroup does not include a sample of 15 year old subjects because the Archdiocese does not maintain programs for children at this age level and because limitation on time and money made it impossible for us to follow up those children who had moved to other facilities. The PAR sample ranged in IQ from 45 to 82, in CA from 8-7 to 13-5, and in MA from 4-10 to 11-5.

The institutional subgroup (INS) was made up of 50 EMR children drawn from various cooperating institutions in the

tristate New York metropolitan area. The institutional facilities involved were Willowbrook State School (N.Y.), Suffolk State School (N.Y.), Southbury Training School (Conn.), and Edward R. Johnstone Training and Research Center (N.J.). The INS subgroup was composed of 15 Ss at each of the CA levels 11, 13 and 15 years and of 5 Ss at CA 9. The limitation in the 9 year old segment was due to the relatively small number of institutionalized children at that age level who could meet the criteria for inclusion in the study. The INS sample ranged in IQ from 45 to 72, in CA from 8-7 to 15-3, and in MA from 4-1 to 9-5.

Table I summarizes the characteristics of the three major subgroups and of the total population according to MA, CA, and IQ.

Table II summarizes the population characteristics by sex, race and setting.

Table I

Means and Standard Deviations of MA, CA, and IQ
For Different Settings (N=215)

Variables		Setting PS	PAR	INS	Total
MA	$\bar{X}$	90.91	83.31	83.56	87.37
	SD	20.17	16.36	15.25	17.79
CA	$\bar{X}$	142.64	131.53	150.40	142.37
	SD	26.52	19.48	23.48	25.31
IQ	$\bar{X}$	65.19	64.67	59.00	63.64
	SD	6.79	9.49	6.44	7.80

Table II

Population Characteristics by Sex, Race and Setting

	Setting								
	PS		PAR		INS		Total Race		Total Sex
	W	NW	W	NW	W	NW	W	NW	
Male	30	36	20	6	16	23	66	65	131
Female	22	32	14	5	7	4	43	41	84
Total	52	68	34	11	23	27	109	106	215

Materials and Procedure

Each S was seen individually and the following instruments were administered in two separate sessions (AM and PM) in the given order. The separation in time was considered necessary in order to minimize fatigue and because of the similarity in form and content of some of the tests involved (e.g., CPT and RP-F).

First Testing Session (AM)

1. Modified Intellectual Achievement Responsibility Questionnaire (MIARQ)

   The instrument used in this study is a modified form of an original 34-item forced-choice scale developed by Crandall, Katkovsky, and Crandall in 1965. The modified version of the test consists of 24 forced-choice items.

   As in the original scale, each item stem describes either a positive or a negative achievement experience which occurs in most children's daily lives. The stem is followed by one statement which indicates that the event was caused by the child and another statement indicating that the event occurred because of the behavior of someone else in the child's immediate environment. Internal alternatives are designated by the symbol "I". Positive event items are indicated by a plus sign and negative events by a minus sign following the "I". A child's I+ score is obtained by summing all positive events for which he assumes "credit", and his I- score is the total of all negative events for which he assumes "blame". His total score is the sum of his I+ and his I- subscores.

   The MIARQ differs from the original IAR scale (see Appendix C_1) in a number of ways. As already noted, the MIARQ scale is shorter (24 items as against 34 in the original). In addition, the language level of each item and of the general instructions is simplified, and the S is given two introductory examples to be sure he understands the requirements of the task. Throughout an effort was made to modify the equivalent items in the original scale in such a manner as to maintain the essential meaning of the original items. An example follows.

IAR Scale (original)

> Suppose you did better than usual in a subject at school. Would it probably happen
> a) because you tried harder, or
> b) because someone helped you

MIARQ Scale (modified)

> When you do better in school, is it
> a) because you try hard, or
> b) because somebody helped you

The modifications exemplified above were promulgated on the basis of pilot administrations to mentally retarded children who quickly demonstrated their difficulty with the original instrument. The modified IARQ adheres to the specific design of the original authors (Crandall et al, 1965) that the IAR scale should differ from the Children's Locus of Control Scale and the Children's Picture Test of Internal-External Control in three important dimensions: (a) it purports to assess children's beliefs in reinforcement responsibility exclusively in intellectual-academic achievement situations; (b) it limits the source of external control to those persons who have the most intimate contact with the child, i.e., his parents, teachers, and peers; and (c) it was constructed to sample both positive and negative events for which the individual could accept responsibility. The modified IARQ is presented in Appendix C_2.

With the population employed in the present study, the MIARQ has a Cronbach Alpha reliability coefficient of .58.

2. Children's Picture Test of Internal-External Control (CPT)

The test consists of six cartoon items, in which the subject is asked to state "what he would say" in various life-like situations which involve the attribution of responsibility. The items are scores along a seven-point scale with three degrees of internality, three of externality, and a nondiscriminatory midpoint. The higher the score the more <u>external</u> the orientation.

In the present study CPT was administered individually employing an oral card-by-card method. The instructions and the comments on each card were read by the Examiner and S's responses were recorded verbatim. A sample of this instrument is presented in Appendix D. With the population employed in this study, the CPT has a Cronbach Alpha reliability coefficient of .24.

3. Karp-Konstadt Children's Embedded Figures Test (CEFT)

The Children's Embedded Figures Test is a variation of the Embedded Figures Test originally devised by Witkin et al (1954) and is a revision of the children's version of the Embedded Figures Test devised by Goodenough and Eagle (1963).

The CEFT (Karp and Konstadt, 1963) consists of 25 items in which the subject is required to find the location of two forms (Tent and House) embedded in complex figures. The subject is given pre-test practice with figures which are slightly embedded in complex forms to illustrate the procedure and to facilitate his understanding of the task. He then proceeds immediately into the test proper.

The test was standardized on 160 children ranging in age from 5 to 12 years (Karp and Konstadt, 1963). The subjects were randomly selected from student populations in N.Y.C. from neighborhoods of diverse ethnic, religious, and racial composition. Validity coefficients between CEFT and EFT were .83 to .86 at 11-year level.

The test measures what Witkin and his associates call field dependence and field independence. A field dependent individual is described as:

> "Characterized by passivity in dealing with the environment by unfamiliarity with and fear of their own impulses, together with poor control over them; by lack of self-esteem and by possession of a relatively primitive and undifferentiated body image."

A field independent individual is described in converse terms. The CEFT reveals that there is increasing ability of the subjects to detect the embedded forms from years 5 to 12. This would indicate a developmental process moving from dependency to independency with increasing age. A sample of

this instrument is presented in Appendix E. A Cronbach Alpha reliability coefficient of .87 was obtained with the present study population.

Second Testing Session (PM)

4. Rosenzweig Picture-Frustration Study (RP-F)

The Rosenzweig P-F is a limited projective technique designed to assess reactions to situations of stress. The children's form (Rosenzweig et al, 1948) is designed for ages 4 through 13 and consists of an eight-page booklet of twenty-four cartoon-like drawings, each showing a situation likely to occur in any ordinary day. The stimulus material depicts crudely sketched figures of males and females (both adults and children) whose facial expressions are deliberately omitted, but with just enough detail in both figure and background to suggest the overall situation. However, in each cartoon the instigator of the frustration as well as the victim are clearly identified.

The subject is requested to give the response he thinks the thwarted person in the cartoon would most likely give, on the assumption that the subject will identify with and respond for the anonymous figures who are being thwarted. The frustrating agents are adults and children from both sexes, while the frustrated person is sometimes a boy and at another times a girl. The instructions deliberately stress the game aspects of the test.

The present study employed the individual oral card-by-card administration method discussed by Lipman (1959) and Mirmow (1952). Examiners read both the instructions for the test and the comments on each card and recorded the response of the subject. A sample plate of this scale is presented in Appendix F.

5. Bialer-Cromwell Children's Locus of Control Scale (CLC)

The construct "Locus of Control" (LC) is seen as reflecting the individual's ability to conceptualize the relationship between his own behavior and the outcome of events. Thus, the "Children's Locus of Control Scale" (Bialer, 1960, 1961) was designed to measure the extent to which a given child characteristically construes event outcomes (both positive

and negative) as being consequential to his own actions (i.e., internally controlled) rather than as due to the whim and/or manipulations of fate, chance, objects, or other people (i.e., externally controlled.

The scale consists of 23 questions verbally administered, and so worded that for some items a "Yes" answer, and for other items a "No" answer are taken as indicating internal control (ILC). In the administration of the questionnaire, S is simply asked to say "Yes" or "No" to each item as it is read to him; and the scale is scored in terms of the total number of responses in the direction of internal control. The overall score is interpreted as indicating the S's relative ability to conceptualize the outcome of events as being under his own control (the higher the score, the more internal the orientation).

In data derived during the standardization of the scale, an adjusted split-half reliability of .86 was obtained. In subsequent studies, Miller (1960), utilizing 100 mentally retarded Ss, found an adjusted split-half reliability of .87; and McConnell (1962) obtained a test-retest reliability coefficient of .73 with 18 retarded Ss. Gozali and Bialer (1968) obtained test-retest reliabilities of .84 and .87 with original and referse forms of the scale respectively--as well as significant indications that the scales were relatively independent of response - set bias among a total population of 189 retardates. The scale is presented in Appendix G. Present data yielded a Cronbach Alpha reliability coefficient of .38.

6. Wide Range Achievement Test (WRAT)

The instrument utilized in our study was the 1965 revision of the WRAT (Jastak et al, 1965). For our purposes only the reading and arithmetic subtests were employed. The spelling subtest was omitted because it was too time consuming for the population.

RESULTS

The statistical analyses have necessitated numerous tabular arrangements. To facilitate the readability of the report, tables have been verbally summarized in the following text, and the tables themselves have been placed in Appendix A. All statistical analyses were run on the IBM 6600 Computer, and the .05 level of probability was used to determine statistical significance.

The results will be delineated in accordance with the data relating to empirical objectives and to those bearing on specific hypotheses.

Empirical Data

Response Characteristics

The means and standard deviations of the personality measures and of reading and arithmetic scores for the various settings at each age level are presented in Tables III, IV, and V.

Analogous data for the total population at each age level appear in Table VI.

Means and standard deviations of the personality and achievement variables for the different settings and for the total sample, combining age levels, are given in Table VII.

The relationships among the personality scales to each other and to reading and arithmetic scores were examined by correlational techniques (Pearson r) for each setting separately and for the population as a whole.

Table VIII presents the intercorrelation matrix for the PS subgroup which consisted of 30 subjects at each of the age levels 9, 11, 13, and 15.

Significant correlations were obtained between CEFT and IARQ ($p < .05$), CEFT and RP-F(I) ($p < .01$), CEFT and RP-F(M) ($p < .01$) and between MIARQ and RP-F(I) ($p < .05$) and MIARQ and RP-F(M) ($p < .01$). Within the RP-F, negative relationships ($p < .01$) were observed between (I) and (E) and between (E) and (M). The correlations with achievement also reveal interesting trends. MIARQ and

CEFT both correlate with RGL and AGL ($p < .01$). AGL also correlates with RP-F(I) and RP-F(M) ($p < .01$). RGL shows a positive relationship to RP-F(I) ($p < .05$) and to RP-F(M) ($p < .01$). Both RGL and AGL show a negative correlation with RP-F(E) ($p < .05$). No other significant relationships were apparent for this subgroup.

The intercorrelation matrix for the INS subgroup, which consisted of 5 subjects at age 9 and 15 Ss at each of the age levels 11, 13 and 15, is presented in Table IX. Significant correlations were obtained between MIARQ and RP-F(M) ($p < .01$), CEFT and RP-F(M) ($p < .05$), CLC and RP-F(I) ($p < .05$). RP-F(E) was found to be negatively related to RP-F(I) ($p < .01$) and RP-F(M) ($p < .01$). It is also noted that MIARQ, CEFT, and RP-F(M) are all correlated to AGL ($p < .05$). The results, however, must be considered in the context of a limited sampling and the fact that age 9 represents only 5 subjects.

Table X presents the intercorrelation matrix for the PAR subgroup consisting of 15 subjects at each of the age levels 9, 11, and 13. Significant correlations were found between MIARQ and RP-F(I) ($p < .01$) and CEFT and RP-F(I) ($p < .05$). RP-F(E) was found to have a negative relationship to RP-F(I) ($p < .05$) and RP-F(M) ($p < .01$). The PAR data also indicated that for that sample the AGL was significantly related to MIARQ ($p < .01$), CEFT ($p < .05$), and RP-F(I) ($p < .01$). These results must also be evaluated with caution due to the small sample size and the restricted CA range (ages 9, 11, and 13).

The intercorrelation matrix for the total population is presented in Table XI. The total population consisted of 50 subjects at age 9, 60 subjects at each of the age levels 11 and 13, and 45 subjects at age 15, for a total of 215 subjects. As Table XI shows, significant positive relationships were found between MIARQ and CEFT ($p < .01$), RP-F(I) ($p < .01$), RP-F(M) ($p < .01$); and there was a negative relationship between MIARQ and RP-F(E) ($p < .01$). CEFT was found to be positively related to RP-F(I) ($p < .01$) and RP-F(M) ($p < .01$) and negatively related to RP-F(E) ($p < .05$).

The dimensions tapped by the RP-F scale were significantly related to each other in the following manner. RP-F(E) was negatively correlated with RP-F(I) ($p < .01$) and RP-F(M) ($p < .01$), and RP-F(I) was positively correlated to RP-F(M) ($p < .05$). It should be noted that the CPT and CLC scales showed no relationship to

each other or to any other personality measure (except for the correlation of CLC and RP-F(I) for the INS group) used in the study. The MIARQ, CEFT, RP-F(I), and RP-F(M) were significantly related to RGL, and the MIARQ, CEFT, RP-F(I), and RP-F(M) had a positive relationship with AGL. However, RP-F(E) was negatively related to AGL. No other significant relationships were evident for the total population.

The intercorrelation matrices for specific age levels of the total population are presented in Tables XII, XIII, XIV, and XV. The data summarized in these tables will be further reviewed in the subsequent section under Hypothesis Testing.

The relationships between age and academic success and failure for the various settings were examined by a series of Chi Square analyses for reading and arithmetic separately. For the purpose of this analysis, academic failure was defined as performance at more than one-half year below MA expectancy. Tables XVI and XVII present the descriptive data concerning the pattern of success and failure scores by age and setting for reading and arithmetic, respectively. Table XVIII summarizes the Chi Square analysis of the descriptive data across settings.

Common Dimensions

Common personality dimensions of the personality scales were examined by means of factor analysis, utilizing data from the total population. In combining the data from the PS, INS, and PAR groups for this analysis, it was assumed that these subgroups represent samples of the broad spectrum of individuals we categorize as "Mentally Retarded". The small size of the INS and PAR samples also precluded meaningful individual factor analysis for these particular groups. The age and achievement variables were included in the factor analysis because of the consistent relationships between these variables and the personality scales found in earlier analyses. The unrotated and rotated (Quartimax) factor matrices for all pertinent variables are shown in Table XIX. As indicated, two factors were derived through Quartimax rotation. Factor A consists of MA, CA, MIARQ, CEFT, RP-F(I), RGL, and AGL. Factor B is comprised of a positive loading for RP-F(M) and a negative loading for RP-F(E).

The nature of the curve for the developmental trend for each of the personality characteristics and for

academic achievement was examined graphically. The derived curves for each of the pertinent variables are presented for specific settings and for the total sample in Figures A through J (Appendix B). Inspection of the figures indicates a developmental trend from lesser to greater internality with increasing CA.

Hypothesis Testing

H1: There is a significant relationship between the various personality scales at all CA levels under consideration.

Table XII indicates that for the combined 9 year group there was a significant positive relationship between RP-F(I) and CEFT ($p < .01$), and there were significant negative correlations ($p < .01$) between RP-F(E) and both RP-F(I) and RP-F(M). No other correlations were statistically significant at this age level.

According to Table XIII, at age 11 RP-F(I) showed significant correlation ($p < .05$) with RP-F(M), with CEFT, and with MIARQ; and RP-F(M) was also significantly related ($p < .05$) to MIARQ. No other coefficients were significant for the 11 year olds.

Table XIV shows that with the 13 year old sample MIARQ and RP-F(I) were significantly correlated ($p < .05$), while again RP-F(E) showed a significant negative relationship (p .01) to both RP-F(I) and RP-F(M).

As can be seen by Table XV, among the 15 year old Ss, RP-F(E) was significantly negatively related ($p < .05$) to both CEFT and CLC, as well as to both RP-F(I) and RP-F(M) at ($p < .01$). In addition, RP-F(M) was significantly correlated with CEFT ($p < .01$).

H2: There is a developmental trend across the CA range toward an increasingly internal frame of reference.

This trend was generally indicated by the graphic representations in the several figures mentioned above (see Appendix B). In addition, a one-way analysis of variance technique was utilized to compare the differences between each age group on each of the personality and achievement trends for the various settings. Duncan's multiple range test of significance indicated the following for the specific subpopulations:

PS Group (CA range 9 to 15)

1. MIARQ. There was increasing internality from

CA 9 to CA 13 ($p < .05$). However, there is no significant difference between CA 13 and CA 15.

2. CEFT. There was a significant trend toward greater internality from CA 9 to CA 15 ($p < .05$), with no apparent difference between CA 9 and CA 11.

3. CPT. No significant trends were derived.

4. CLC. Significant trends ($p < .05$) were observed between ages 9 and 11, 9 and 13, and 9 and 15. Other trends were not significant.

5. RP-F(E). There was an overall significant diminishing of the (E) response from CA 9 to CA 15 ($p < .05$). However, no differences emerged between 9 and 11 and between 11 and 13.

6. RP-F(I). There was a significant increment in the (I) response from CA 9 to CA 13 and from CA 9 to CA 15 ($p < .05$), with no difference between CA 9 and CA 11. Significant increases were also observed from CA 11 to 13 and 11 to 15 ($p < .05$), with no differences between CA 13 and 15.

7. RP-F(M). There was a significant increment in the (M) response over the total age range ($p < .05$), with no significance between CA 9 and 13.

8. RGL. There was a significant increase ($p < .05$) in reading achievement between CA 9 and 11, CA 9 and 13, and CA 9 and 15. There was, however, no difference between CA 11 and 13. Nevertheless, significant increments were obtained between CA 11 and 15 and between CA 13 and 15.

9. AGL. There was a continuous significant developmental increment in arithmetic achievement from one age level to the next ($p < .05$).

PAR Group (CA range 9 to 13)

1. MIARQ. There is a significant trend ($p < .05$) toward increasing internality from CA 9 to CA 11 and a leveling off at that point with no significant difference between CA 11 and CA 13.

2. CEFT. No significant developmental trends derived.

3. CPT. No significant trends derived.

4. CLC. No significant trends derived.

5. RP-F(E). No significant trends noted.

6. RP-F(I). No significant developmental trend.

7. RP-F(M). No significant differences obtained between age levels.

8. RGL. There was a continuous and significant increment ($p < .01$) in reading achievement between each of the successive age levels.

9. AGL. Arithmetic achievement increased significantly ($p < .01$) from CA 9 to CA 11; however, it leveled off from CA 11 to CA 13, with no significant difference between the latter age groups.

INS Group (CA range 9 to 15)

1. MIARQ. There were no apparent differences between CA 9, 11, and 13; however, there was a trend toward significantly greater ($p < .01$) internality from CA 13 to CA 15.

2. CEFT. No significant developmental trends were derived on this variable.

3. CPT. No significant trends noted.

4. CLC. No significant trends noted.

5. RP-F(E). The (E) response showed no change from CA 9 to 11 to 13; however, at that point there was a significant decrement ($p < .05$) from CA 13 to CA 15. There was also a marginally nonsignificant difference between CA 9 and CA 15. The apparent equality of the means for the RP-F(E) variable at the latter age levels can probably be accounted for as a statistical artifact generated by the relatively fewer number of Ss at CA 9 ($N = 5$) than at the other age levels ($N = 15$).

6. RP-F(I). No significant developmental trend derived.

7. RP-F(M). There were no significant differences in the (M) response between CA 9, 11, and 13; however, that response increased significantly ($p < .01$) from CA 13 to CA 15.

8. RGL. No significant trends derived.

9. AGL. There were no significant differences between CA 9 and CA 11; however, arithmetic achievement increased significantly ($p < .05$) from CA 11 to age 13 and then leveled off with no difference between CA 13 and 15.

Since it was observed that the relatively small CA 9 sample in the INS group may have led to somewhat spurious results within this setting, it was decided to reanalyze all the data for this group, eliminating the scores for those 5 Ss who were at CA 9.

The resulting reanalysis led to findings regarding developmental trend relationships among CA 11, 13, and 15 for the various measures which were completely analogous to those reported above for the same levels on the given measures. With specific reference to RP-F(E), the following results were confirmed: The (E) response showed no change from CA 11 to 13, with a significant decrement ($p < .05$) from CA 13 to CA 15.

In order to determine the role played by the developmental variables in the relationship between personality and achievement, partial correlations were obtained between MA and CA and each of the tests employed ($N = 215$). Tables XX and XXI present the zero-order and partial correlations of personality and achievement measures, with MA and CA controlled for reading and arithmetic, respectively.

As these tables indicate, when the combined effects of MA and CA are controlled, the contribution of the personality measures to academic achievement reduces to practically zero for our sample.

Due to the inequalities in representation of the various age levels among the settings utilized, a comparative analysis was made of reading and arithmetic achievement scores at ages 11 and 13 both of which were represented in all settings. For this purpose a factorial ANOVA design was employed. Tables XXII and XXIII

summarize the findings of the analysis of variance for reading and arithmetic, respectively.

As noted in Table XXII, there was a significant interaction ($p<.01$) between settings and age levels for reading achievement. Examination of simple effects, employing the Scheffe test of multiple comparisons of means, revealed that the 13 year old PAR group excelled their PS and INS peers in reading achievement, while there was no difference among 11 year olds across settings.

Table XXIII reveals that there was a significant main effect for age levels, indicating that with increasing age arithmetic achievement increases. This is in keeping with the results of earlier analyses.

DISCUSSION

The present study set out to examine the relationships among a variety of both verbal and nonverbal personality scales which purport to measure the extent to which an individual behaves as if he or the environment exercises control over the outcome of events. The study further investigated the developmental trends involved in this internal-external dimension of personality and its relation to academic achievement among educable retardates.

The present study modified the original proposal in the following respects: (a) it does not contain a sample of 7 year old Ss; (b) it does not contain any 15 year old parochial school Ss; (c) there were only five Ss found in the 9 year old institutional group; and (d) it does not contain Ss from private school or special class waiting lists.

It was hypothesized that there would be a significant relationship between the various personality scales at all CA levels. The results obtained in testing this hypothesis are very difficult to interpret, due to the differential pattern of relationships at the different age levels. These patterns are shown in Tables XII through XV, and are summarized in the Results section. There is no consistency in the relationships across ages; and, therefore, the hypothesis was not sustained.

However, in examining the intercorrelations of the personality scales for the total group within specific group settings, we find the following:

1. CEFT is significantly correlated with MIARQ only in the PS group and total population.

2. CEFT is significantly correlated with RP-F(M) and RP-F(I) in the PS group and the total population, while it correlated with RP-F(M) in the INS group and RP-F(I) in the PAR group.

3. MIARQ similarly correlated with RP-F(M) and RP-F(I) in the PS group and the total population while correlating with RP-F(M) in the INS group and RP-F(I) in the PAR group.

4. There is a consistent negative correlation between RP-F(I) and RP-F(E) and between RP-F(M) and RP-F(E) in all samples, when considered by setting or the total population. However, RP-F(I) and

RP-F(M) are not significantly related to each other in any of the samples considered.

5. CLC correlated with only one variable in any of the analyses--namely, RP-F(I) in the INS group.

6. CPT did not correlate with any variable in any sample.

The presentation of the above results indicate that there is apparently no consistent relationship among the personality scales from the standpoint of different settings. There is, however, a remarkable consistency within the RP-F scale in so far as there is a consistently negative relationship between (E) and both the (I) and (M) dimension.

This, together with the finding that both CEFT and MIARQ correlate either with the (M) or the (I) dimension in the various settings, with (I) and (M) in the total population, and negatively with the (E) dimension for the total population, seems to lend weight to the validity of the construct of internal-external dimensions of personality as measured by these scales.

Consideration of the lack of relationship between CLC and CPT seems to indicate that these variables measure different aspects of personality than those tapped by MIARQ, CEFT and RP-F for our samples. The lack of relationship between CLC and CPT is counter to that found by Battle and Rotter (1963) with a normal sample. However, in an unpublished study, Crandall (Personal Communication, 1967) found that CLC and CPT did not correlate for a 9th grade sample.

A number of variables seem to be instrumental in the lack of relationship between CLC and the MIARQ in our subjects. While both are verbal scales, the CLC questions appear to require a more global and abstract conceptualization of control of events than do the more concrete, educationally oriented questions of the MIARQ. The yes-no response requirement of CLC may also be more prone to eliciting inaccurate responses and this may have been reflected in its relatively low reliability among our Ss.

Another aspect of this study was to investigate the relationships between the personality scales and academic achievement in reading and arithmetic. The Wide Range Achievement Test was utilized because of its brevity in administration, its broad assessment range, and its low scorable base. It estimates reading grade level by the ability of the subject to recognize and pronounce a written letter or word. Arithmetic

achievement is measured by computation skills. This method of assessment of reading and arithmetic skills for a retarded group is such that it was anticipated it would provide for a meaningful distribution at each age level in each setting and for the total population. The anticipated RGL distribution did not occur except in the PAR sample. The AGL distribution, however, showed a more definite progression with age for each setting and for the total population.

In the PS sample, the mean RGL was 1.12 at CA 9, 1.93 at CA 13 and 2.96 at CA 15. For the PAR group, the mean RGL at CA 9 was 1.04, and 3.47 at CA 13. In the INS group, the mean AGL was 1.60 at CA 9, 1.86 at CA 13 and 2.28 at CA 15. For the total population, the mean RGL ranged from 1.15 at CA 9 to 2.74 at CA 15. The general findings are indicative of skewed distribution with the major proportion of cases below 3rd grade in reading. This kind of distribution had an adverse effect on the results at each CA level and probably affected the results for the entire population.

In the PS sample, the mean AGL was 1.25 at CA 9, 2.76 at CA 13 and 3.50 at CA 15. For the PAR group the mean AGL at CA 9 was 1.18 and 2.79 at CA 13. For the INS group the mean AGL was 1.62 at CA 9, 2.81 at CA 13 and 2.72 at CA 15. For the population as a whole, the mean AGL ranged from 1.27 at CA 9 to 3.2- at CA 15 in a steadily increasing progression.

It is noteworthy from Tables XXII and XXIII that there was an interaction effect between age and settings in the RGL comparisons, but only an age difference in the AGL analysis. It is evident from the data that the PAR sample had a significantly higher RGL at age 13. This may be indicative of the quality and intensity of teaching methodology in the parochial school as compared to the public and institutional settings. It may also be due to the differential background of the children being served in the various settings. For example, we might postulate that the children served in the PS and INS settings are more socially, economically, and experientially deprived than would be the case in the PAR sample. These conclusions must be tentative because the differences were not evaluated at age 15, and there were no differences at age 11. If the complete data at all age levels had been available, there may have been no difference found at age 15.

Despite the limitations of the achievement data, Table XI indicates that for the total sample, AGL shows a significant correlation with MIARQ, CEFT, and all the dimensions of RP-F, as well as with RGL. Concurrently, RGL is significantly correlated with MIARQ, CEFT, and both the (I) and (M) components of RP-F. It is indicated by these results that relationships among certain personality scales also encompass an additional relationship with achievement.

In analyzing these relationships further, a factor analysis yielded two factors as shown on Table XIX. Factor A includes loadings of MIARQ, CEFT, RP-F(I), RGL, and AGL. This appears to represent an Internal Responsibility Factor. The other factor (B) includes a positive RP-F(M) loading and a negative RP-F(E) loading. This appears to represent a comparatively weak Externality Factor. These findings would appear to add further validity to the construct of internal-external personality dimensions and to suggest strongly that these dimensions, as measured by MIARQ, CEFT and RP-F(I), are related to academic achievement.

However, a further analysis of the data, as presented in Tables XX and XXI, cast doubt on the nature of the derived factors.

It should be noted that MA and CA loaded very heavily on the "Internal Responsibility Factor". On the one hand, the finding lends credence to the developmental nature of this factor, and on the other it raises the suspicion that the relationships delineated by this factor may be strongly based on the correlations of MA and CA with the variables involved. In order to evaluate the latter possibility, partial correlations were derived for the personality and achievement variables with MA and CA controlled. Tables XX and XXI show that when the developmental variables are partialled out of the relationship between the personality and achievement variables, the correlations between the latter become essentially zero. These findings suggest that the relationships between the personality variables and achievement may be largely artifactual, and that the internal-external dimension of personality plays a minimal role in academic achievement as compared to these developmental variables, at least with our subject population.

The relationship between age and academic success and failure in the various settings are presented in Tables XVI and XVII.

The data in Tables XVI and XVII were subjected to Chi Square analyses to evaluate the significance of the various relationships across settings. The result of these analyses, which are summarized in Table XVIII, indicate that there were no differences in success and failure in arithmetic across settings for the various age levels. In other words, the pattern for differential success and failure in arithmetic achievement was maintained across settings. Table XVIII also indicates that the differential patterns of success and failure in reading achievement were significant across settings only at the 13 year level. It is evident from Table XVI that at age 13, the PS group has a significantly different pattern

of success-failure experience than do the other groups. It is noteworthy that at age 9, the PS and PAR groups show predominantly success experiences in reading by our criteria. However, while the PAR group maintains this pattern through age 13, the PS group completely reverses the success-failure pattern at CA 13 and maintains this reversal through CA 15. These findings seem to lend further credence to the aforementioned tentative conclusions regarding differential teaching methodologies and experiential backgrounds characteristic of the various settings.

Another hypothesis tested in this study was that there would be a developmental trend moving from an external (or lesser internal) frame of reference to greater internality. As indicated, this hypothesis was tested empirically by a trend analysis and statistically by examining the significance between the means at each age level for each personality scale in each setting. The general hypothesis was sustained only for the PS group. This is clearly evident in the graphic presentation in all cases for that sample except for the CPT (See Appendix B).

In the PAR group the pattern is markedly different. Significant developmental trends were evident only in the case of MIARQ. In the INS group there was again a different pattern. Here, MIARQ shows a developmental trend only from CA 13 to 15; and while the RP-F(I) dimension showed no significant developmental trend across the age range tested, the (E) and (M) dimensions of RP-F showed significant developmental trends from CA 13 to 15 only.

The inconsistent developmental trends across settings make it impossible to interpret the data in any meaningful manner.

CONCLUSIONS

The present results must be viewed as highly inconclusive. This is largely because the results are very difficult to interpret due to various differential patterns of the relationships under investigation at different age levels for the specific settings.

The following findings summarize the inconsistencies found.

1. The general hypothesis of a significant relationship between the various personality scales at all CA levels was not sustained. Certain consistent relationships obtained only between the components of the RP-F scale and between these components and MIARQ and CEFT for the population as a whole.

2. The investigation between the personalty scales and academic achievement showed that for the total population there were some significant correlations between the achievement and personality variables. Also, a factor analysis yielded factor loadings which seemed to relate the personality scales and achievement variables meaningfully. However, further analysis in which MA and CA were partialled out of the given correlations vitiated the above findings. It should be noted that these relationships were probably hampered by crucial limitations of the achievement data, namely that reading and arithmetic skills did not distribute themselves adequately at each age level in the various settings.

3. There were marked inconsistencies between the developmental trends of the personality scales for the different settings making it impossible to interpret the findings in a meaningful manner.

The overall conclusion which must be drawn from the present results is that with the mentally retarded subjects utilized in this study, internal-external dimensions of personality play a minimal role in academic achievement as compared to that played by MA and CA. The inconsistent findings in the various settings further suggest the possibility that differential teaching methodologies as well as the different experiential characteristics of the subjects may be critical in the obtained results.

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APPENDIX A

Tables III - XXIII

Table III

Means and Standard Deviations of
Personality and Achievement Measures
by Age Level for PS Group (N=120)

Age Levels

Measures		Age 9 (N=30)	Age 11 (N=30)	Age 13 (N=30)	Age 15 (N=30)
MIARQ	$\bar{X}$	12.00	13.66	15.50	16.46
	SD	3.86	2.89	3.29	2.44
CEFT	$\bar{X}$	4.46	4.76	7.43	10.43
	SD	2.60	2.23	4.68	5.01
CPT	$\bar{X}$	15.46	14.46	14.23	14.13
	SD	4.50	4.03	3.57	3.81
CLC	$\bar{X}$	12.50	10.93	12.83	13.23
	SD	3.53	2.97	2.78	2.17
TE	$\bar{X}$	11.06	9.20	8.86	8.73
	SD	4.00	4.15	2.90	3.09
TI	$\bar{X}$	4.16	4.43	5.46	5.93
	SD	2.38	1.66	1.94	1.50
TM	$\bar{X}$	5.10	8.33	7.26	8.50
	SD	2.65	3.33	3.09	2.66
RGL	$\bar{X}$	1.12	1.81	1.93	2.96
	SD	.64	.88	1.03	1.52
AGL	$\bar{X}$	1.25	2.12	2.76	3.50
	SD	.70	.73	.98	1.01

Table IV

Means and Standard Deviations of Personality and Achievement Measures by Age Level for PAR Group (N=45)

Measures		Age Levels: Age 9 (N=15)	Age 11 (N=15)	Age 13 (N=15)
MIARQ	$\bar{X}$	11.13	14.53	14.33
	SD	2.56	3.85	3.81
CEFT	$\bar{X}$	6.27	6.80	7.80
	SD	4.43	5.40	5.80
CPT	$\bar{X}$	16.07	15.20	15.93
	SD	5.30	2.60	3.34
CLC	$\bar{X}$	13.40	13.40	12.93
	SD	2.47	2.77	2.25
TE	$\bar{X}$	11.67	9.40	11.13
	SD	3.09	4.34	2.90
TI	$\bar{X}$	4.07	5.00	4.67
	SD	1.58	1.81	1.80
TM	$\bar{X}$	6.07	7.73	7.07
	SD	3.15	4.74	2.99
RGL	$\bar{X}$	1.04	2.03	3.47
	SD	.52	.75	1.56
AGL	$\bar{X}$	1.18	2.13	2.79
	SD	.53	1.17	1.22

Table V

Means and Standard Deviations of Personality and Achievement Measures by Age Level for INS Group (N=50)

Measures		Age Levels			
		Age 9 (N=5)	Age 11 (N=15)	Age 13 (N=15)	Age 15 (N=15)
MIARQ	$\bar{X}$	10.40	12.80	12.93	15.93
	SD	2.97	2.31	3.39	3.24
CEFT	$\bar{X}$	5.80	6.47	9.47	9.33
	SD	2.59	3.60	5.04	4.69
CPT	$\bar{X}$	17.00	16.00	17.00	14.47
	SD	4.24	3.70	3.76	5.49
CLC	$\bar{X}$	10.00	13.20	14.00	12.87
	SD	2.92	3.08	3.21	1.81
TE	$\bar{X}$	12.60	11.53	12.07	9.00
	SD	1.52	3.60	3.28	3.02
TI	$\bar{X}$	4.40	4.53	4.80	5.27
	SD	.55	2.48	2.18	1.67
TM	$\bar{X}$	5.20	5.13	6.33	8.67
	SD	1.64	2.53	2.29	2.29
RGL	$\bar{X}$	1.60	1.96	1.86	2.28
	SD	.40	1.03	.66	1.08
AGL	$\bar{X}$	1.62	1.97	2.81	2.72
	SD	.72	1.00	1.07	.77

Table VI

Means and Standard Deviations of Personality and Achievement Measures by Age Level for Total Population (N=215)

Measures		Age Levels			
		Age 9 (N=50)	Age 11 (N=60)	Age 13 (N=60)	Age 15 (N=45)
MIARQ	$\bar{X}$	11.58	13.67	14.57	16.29
	SD	3.12	3.07	3.58	2.71
CEFT	$\bar{X}$	5.14	5.70	8.03	10.07
	SD	3.29	3.66	5.09	4.89
CPT	$\bar{X}$	15.80	15.03	15.35	14.24
	SD	4.66	3.68	3.73	4.37
CLC	$\bar{X}$	12.52	12.12	13.15	13.11
	SD	3.28	3.16	2.80	2.05
TE	$\bar{X}$	11.40	9.83	10.23	8.82
	SD	3.57	4.16	3.30	3.04
TI	$\bar{X}$	4.16	4.60	5.10	5.71
	SD	2.03	1.92	1.99	1.58
TM	$\bar{X}$	5.40	7.38	6.98	8.56
	SD	2.72	3.78	2.90	2.53
RGL	$\bar{X}$	1.15	1.90	2.30	2.74
	SD	.60	.89	1.30	1.42
AGL	$\bar{X}$	1.27	2.09	2.78	3.24
	SD	.66	.91	1.06	1.00

Table VII

Means and Standard Deviations of Personality and Achievement Measures by Setting and Total Population

Measures		Settings PS (N=120)	PAR (N=45)	INS (N=50)	Total (N=215)
MIARQ	$\bar{X}$	14.41	13.33	13.54	13.98
	SD	3.48	3.73	3.37	3.53
CEFT	$\bar{X}$	6.78	6.96	8.16	7.14
	SD	4.53	5.16	4.45	4.67
CPT	$\bar{X}$	14.58	15.73	15.94	15.14
	SD	4.03	3.85	4.33	4.11
CLC	$\bar{X}$	12.38	13.24	13.02	12.71
	SD	3.04	2.46	2.89	2.91
TE	$\bar{X}$	9.47	10.73	11.04	10.10
	SD	3.70	3.56	3.36	3.66
TI	$\bar{X}$	5.00	4.58	4.82	4.87
	SD	2.04	1.74	1.99	1.97
TM	$\bar{X}$	7.30	6.96	6.56	7.06
	SD	3.25	3.69	2.66	3.23
RGL	$\bar{X}$	1.94	2.18	1.99	2.01
	SD	1.26	1.44	.89	1.23
AGL	$\bar{X}$	2.41	2.03	2.41	2.33
	SD	1.20	1.20	1.00	1.17

Table VIII

Relationships Among Age, Personality and Achievement Measures for PS Group

(N=120)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.73**	.40**	.52**	-.14	.04	-.17	.31**	.32**	.40**	.64**
CA		.50**	.48**	-.15	.14	-.22*	.33**	.29**	.52**	.67**
MIARQ			.23*	-.03	.06	-.17	.22*	.25**	.26**	.37**
CEFT				-.01	.10	-.21*	.32**	.33**	.31**	.46**
CPT					-.09	-.10	-.07	.09	-.14	-.15
CLC						-.03	-.04	.02	.09	.17
RP-F(E)							-.41**	-.65**	-.18*	-.21*
RP-F(I)								.18	.20*	.39**
RP-F(M)									.25**	.33**
RGL										.61**

* Significant beyond .05 level

** Significant beyond .01 level

Table IX

Relationships Among Age, Personality and Achievement Measures for INS Group

(N=50)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.73**	.52**	.30*	-.16	.02	-.19	.17	.48**	.15	.41**
CA		.45**	.31*	-.17	.21	-.32*	.18	.50**	.23	.42**
MIARQ			.28	-.21	.14	-.19	.14	.39**	.12	.30*
CEFT				.01	.03	-.07	.18	.32*	-.04	.39**
CPT					.01	.08	-.04	-.02	-.20	-.07
CLC						-.24	.36*	-.04	.01	.10
RP-F(E)							-.61**	-.56**	-.10	-.12
RP-F(I)								.27	.10	.27
RP-F(M)									.29	.40**
RGL										.56**

* Significant beyond .05 level

** Significant beyond .01 level

Table X

Relationships Among Age, Personality and Achievement Measures for PAR Group

(N=45)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.49**	.45**	.50**	.03	-.01	-.19	.32*	.26	.70**	.74**
CA		.36*	.15	-.02	-.05	-.07	.13	.12	.72**	.55**
MIARQ			.25	-.19	-.12	-.21	.45**	.18	.33*	.58**
CEFT				-.09	-.12	-.24	.33*	.21	.25	.37*
CPT					.14	-.24	-.08	.10	.06	-.09
CLC						-.02	-.11	.05	.02	.05
RP-F(E)							-.35*	-.77**	-.05	-.10
RP-F(I)								-.01	.17	.39*
RP-F(M)									.09	.16
RGL										.71**

* Significant beyond .05 level

** Significant beyond .01 level

Table XI

Relationships Among Age, Personality, and Achievement Measures for Total Sample

(N=215)

Variables	CA	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.72**	.46**	.45**	-.15*	.01	-.20**	.29**	.33**	.43**	.63**
CA		.45**	.39**	-.12	.11	-.21**	.28**	.29**	.46**	.61**
MIARQ			.23**	-.12	.02	-.20**	.25**	.26**	.24**	.41**
CEFT				-.01	.05	-.16*	.28**	.28**	.23**	.42**
CPT					-.01	-.05	-.08	.05	-.10	-.12
CLC						-.05	.03	.01	.07	.12
RP-F(E)							-.44**	-.66**	-.12	-.18**
RP-F(I)								.16*	.16*	.37**
RP-F(M)									.21**	.30**
RGL										.61**

* Significant beyond .05 level

** Significant beyond .01 level

Table XII

Relationships Among Age, IQ, Personality and Achievement Measures: Total Age 9

(N=50)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.22	.97**	.11	.36*	-.24	-.08	.04	.26	.14	.21	.37**
CA		.00	.22	.05	-.17	-.02	-.16	-.02	.05	.20	.00
IQ			.06	.36*	-.21	-.07	.07	.28*	.13	.17	.39**
MIARQ				-.08	-.12	.03	-.18	-.06	.19	.03	-.04
CEFT					.00	-.16	-.14	.43**	.26	.14	.25
CPT						.02	-.23	-.03	.26	-.21	-.09
CLC							.00	-.27	-.02	-.21	-.09
RP-F(E)								-.39**	-.43**	-.04	.03
RP-F(I)									.13	.07	.25
RP-F(M)										.20	.34*
RGL											.54**

* Significant beyond .05 level

** Significant beyond .01 level

Table XIII

Relationships Among Age, IQ, Personality and Achievement Measures: Total Age 11

(N=60)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.20	.99**	.35**	.25	-.12	-.01	-.11	.31*	.36**	.12	.48**
CA		.05	.02	-.01	-.27*	.06	.04	-.08	-.11	.00	.25
IQ			.34**	.26*	-.08	-.02	-.14	.33**	.39**	.12	.46**
MIARQ				.16	.01	.03	-.10	.30*	.27*	.19	.44**
CEFT					-.09	.25	.01	.28*	.21	.41**	.42**
CPT						-.04	-.05	-.03	-.04	-.05	-.22
CLC							.05	.03	-.10	.18	.26*
RP-F(E)								-.34**	-.71**	.01	-.06
RP-F(I)									.26*	.03	.28*
RP-F(M)										.19	.30*
RGL											.58**

* Significant beyond .05 level

** Significant beyond .01 level

Table XIV

Relationships Among Age, IQ, Personality and Achievement Measures: Total Age 13

(N=60)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.06	.99**	.22	.28*	-.07	-.21	-.09	-.04	.07	.34**	.44**
CA		-.04	-.02	.12	.04	-.12	-.12	.05	.06	.00	-.01
IQ			.21	.27*	-.07	-.20	-.08	-.06	.07	.33*	.44**
MIARQ				.17	-.18	.00	-.20	.30*	.05	.00	.21
CEFT					.07	-.21	.00	.07	.06	.05	.29*
CPT						.09	.00	-.22	.19	.21	-.14
CLC							-.08	.16	.03	.02	-.08
RP-F(E)								-.46**	-.60**	-.06	-.21
RP-F(I)									-.15	.06	.36**
RP-F(M)										.04	.06
RGL											.41**

* Significant beyond .05 level

** Significant beyond .01 level

Table XV

Relationships Among Age, IQ, Personality and Achievement Measures: Total Age 15

(N=45)

Variables	CA	IQ	MIARQ	CEFT	CPT	CLC	RP-F (E)	RP-F (I)	RP-F (M)	RGL	AGL
MA	.32	.89**	.14	.23	-.04	-.03	-.05	.16	.11	.00	.13
CA		.04	-.04	-.09	-.05	.03	-.18	.19	.11	.30*	.04
IQ			.08	.16	-.10	.02	.07	.08	.00	-.02	.15
MIARQ				-.08	.01	-.27	.09	-.11	.01	.01	.01
CEFT					.14	.20	-.37*	.10	.46**	-.12	.08
CPT						-.12	-.05	.13	.02	-.24	.12
CLC							-.31*	.19	.19	.03	.17
RP-F(E)								-.54**	-.81**	-.03	.02
RP-F(I)									.05	.04	.12
RP-F(M)										-.02	-.05
RGL											.46**

* Significant beyond .05 level

** Significant beyond .01 level

Table XVI

Reading Success and Failure by Age and Setting

Age	Success / Failure	Setting PS	PAR	INS
9	S	23	111	
	F	7	4	
11	S	16	9	12
	F	14	6	3
13	S	8	13	10
	F	22	2	5
15	S	7		6
	F	23		9

Table XVII

Arithmetic Success and Failure by Age and Setting

Age	Success / Failure	Setting PS	PAR	INS
9	S	26	12	
	F	4	3	
11	S	24	11	13
	F	6	4	2
13	S	19	10	14
	F	11	5	1
15	S	9		9
	F	21		6

Table XVIII

Chi Square Values for Academic Success and Failure
At Each Age Level Across Settings

Age	Reading	Arithmetic
9	.06	.34
11	3.03	.83
13	16.22**	4.68
15	1.35	3.75

*p < .05
**p < .01

Table XIX

Unrotated and Rotated Quartimax Factor Matrices

(N=215)

Variables	Unrotated Matrix		A Rotated Matrix	B
MA	.79	.20	.81*	.06
CA	.77	.21	.79*	.04
MIARQ	.53	.05	.51*	.12
CEFT	.51	.02	.49*	.14
CPT	-.13	-.17	-.17	.12
CLC	.09	.03	.09	.00
RP-F(E)	-.45	.68	-.22	-.79*
RP-F(I)	.47	-.19	.38*	.33
RP-F(M)	.52	-.53	.33	.67*
RGL	.56	.22	.60*	-.03
AGL	.78	.23	.81*	.03

*Loadings $>$ .35 considered significant

Table XX

Zero-order and Partial Correlations of Personality and Reading Achievement--MA and CA Controlled

Measure	Zero-order r	Partial r
MIARQ	.245	.013
CEFT	.231	.021
CPT	-.095	-.029
CLC	.066	.037
RP-F(E)	-.123	-.017
RP-F(I)	.165	.022
RP-F(M)	.208	.060

Table XXI

Zero-order and Partial Correlations of Personality and Arithmetic Achievement--MA and CA Controlled

Measure	Zero-order r	Partial r
MIARQ	.405	.120
CEFT	.419	.172
CPT	-.125	-.034
CLC	.115	.106
RP-F(E)	-.178	-.040
RP-F(I)	.370	.232
RP-F(M)	.297	.102

Table XXII

Summary of Analysis of Variance: Reading

Source	ss	d.f.	ms	F
Settings (A)	16.83	2	8.42	8.10*
Age Levels (B)	4.80	1	4.80	4.62*
A x B	11.21	2	5.60	5.38**
error	118.58	114	1.04	

* $p < .05$
** $p < .01$

Table XXIII

Summary of Analysis of Variance: Arithmetic

Source	ss	d.f.	ms	F
Settings (A)	.08	2	.04	$<$ 1.00
Age Levels (B)	14.35	1	14.35	14.21**
A x B	.22	2	.11	$<$1.00
error	114.90	114		

** $p < .01$

APPENDIX B

Figures 1 - 9

Figure 1

MIARQ Developmental Trend At Each CA Level

For The Various Settings

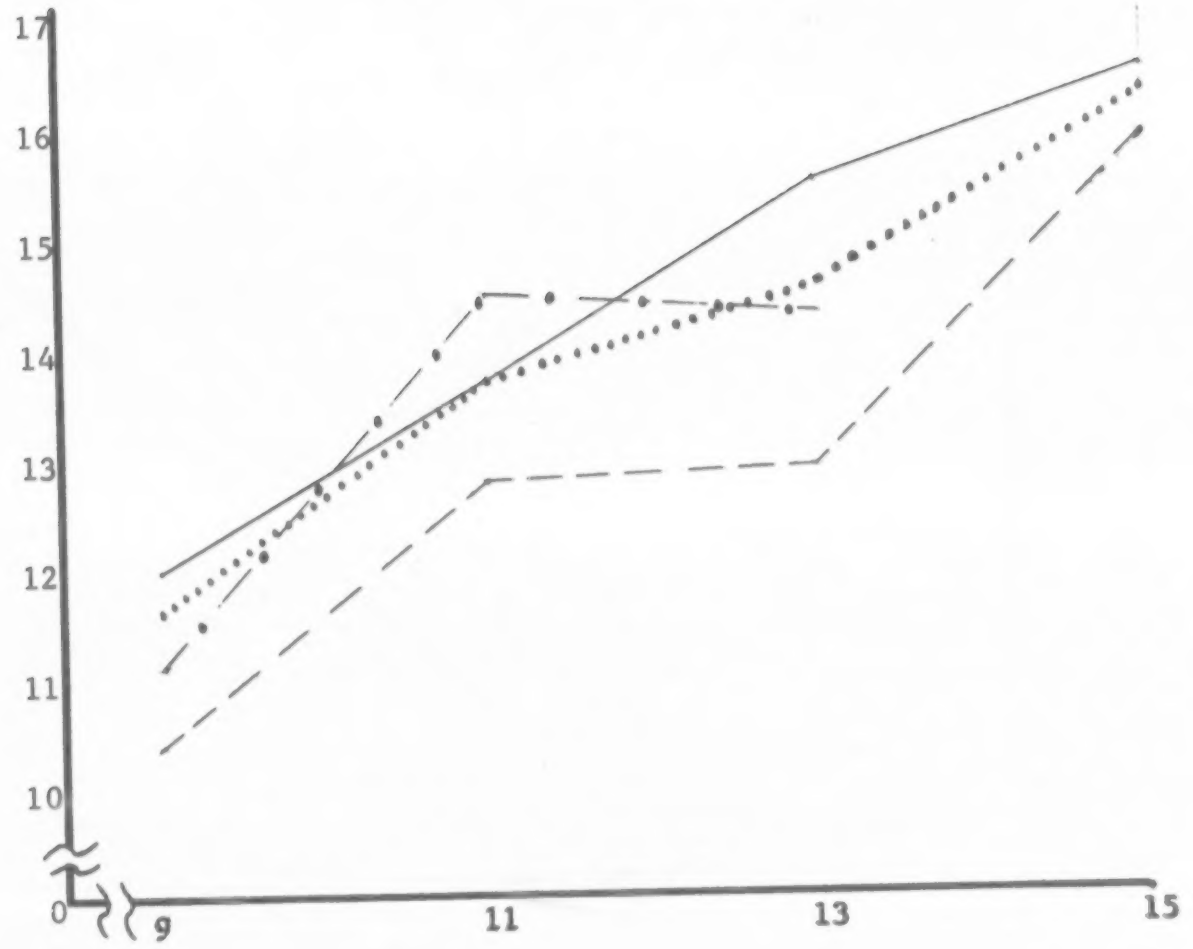


Figure 2

CEFT Developmental Trend at Each CA Level

For The Various Settings

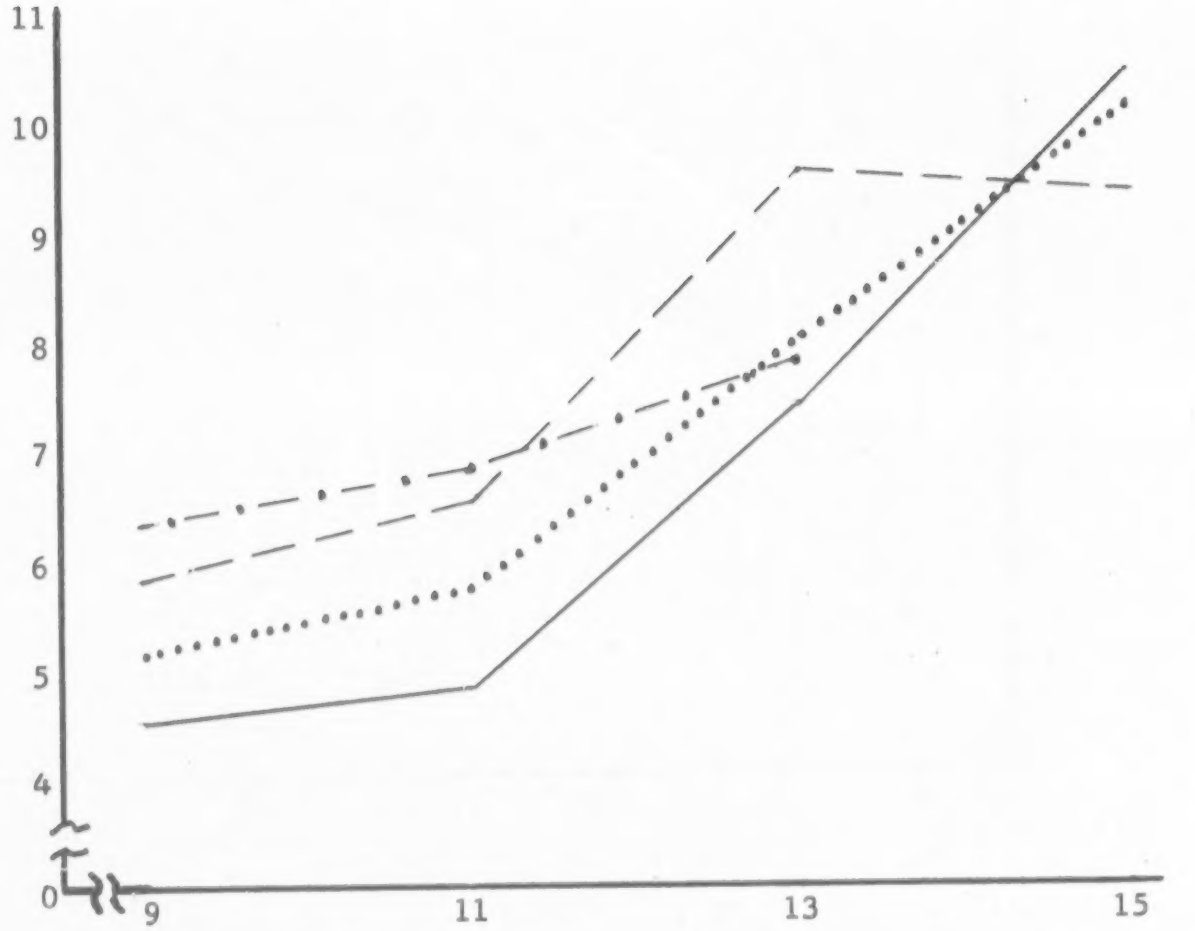
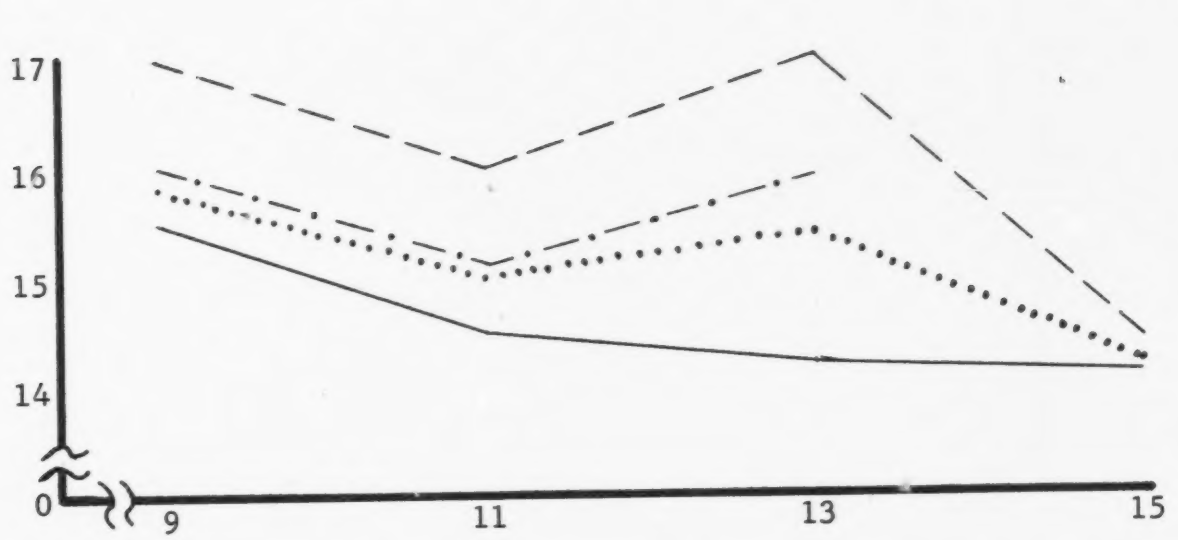


Figure 3

CPT Developmental Trend at Each CA Level

For the Various Settings



— — — — -Institution
—• — • — • -Parochial
————————Public
• • • • • • • • Total

Figure 4

CLC Developmental Trend at Each CA Level

For the Various Settings

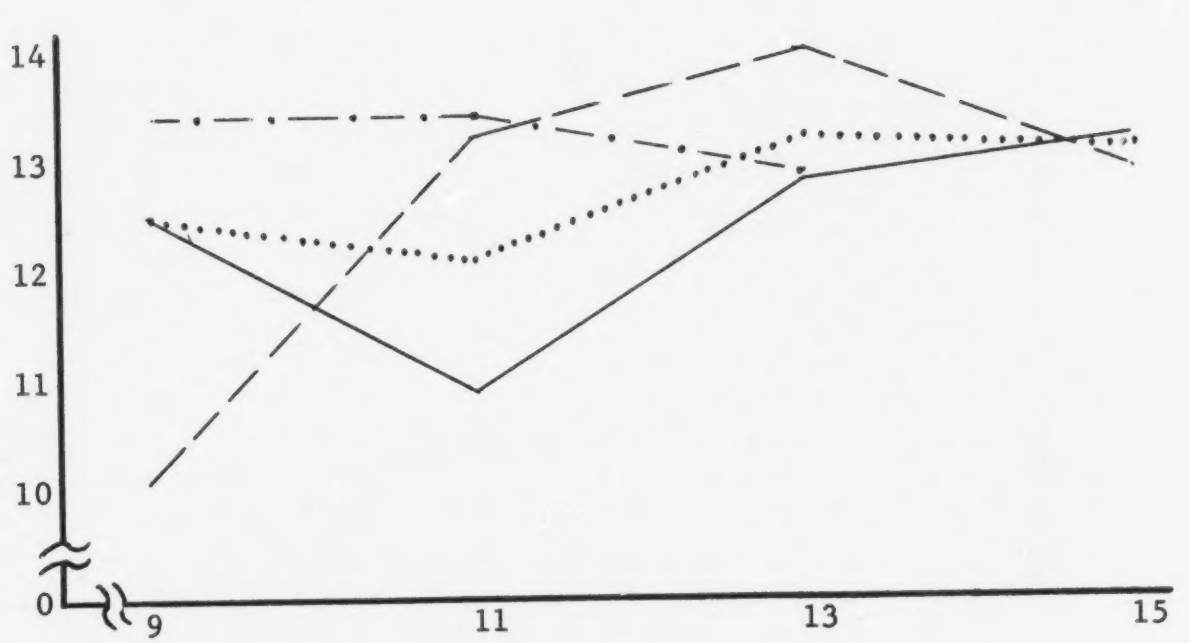


Figure 5

RP-F(E) Developmental Trend at Each CA Level

For the Various Settings

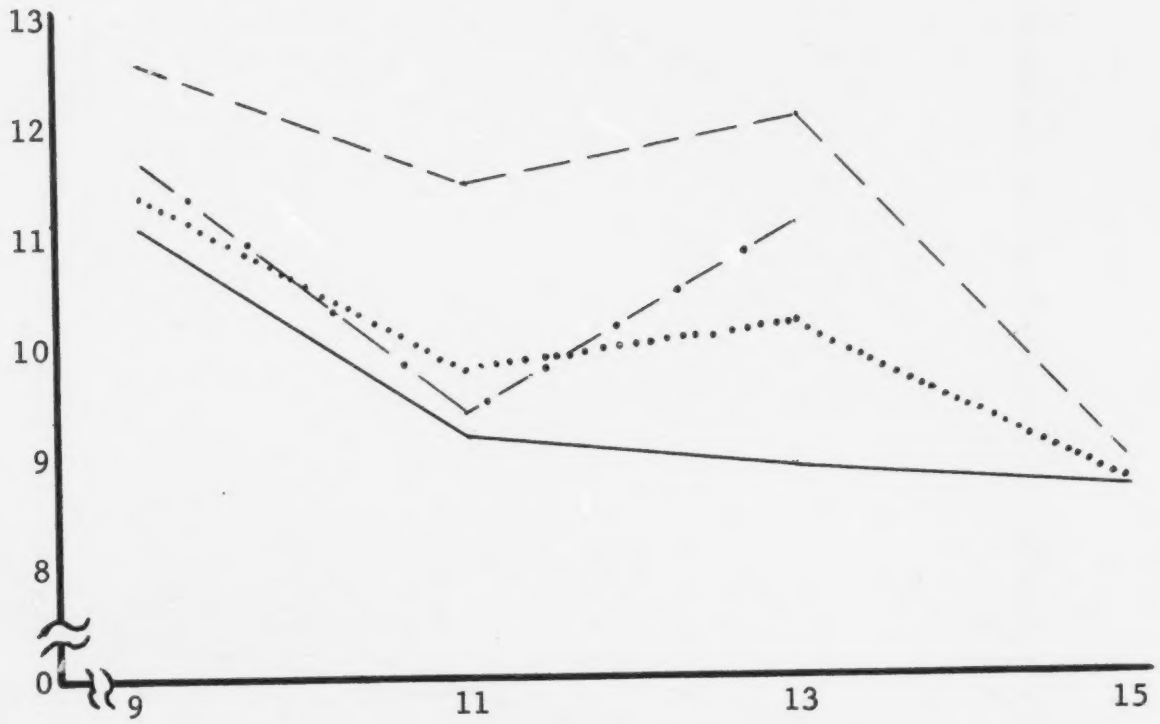


Figure 6

RP-F(I) Developmental Trend at Each CA Level

For the Various Settings

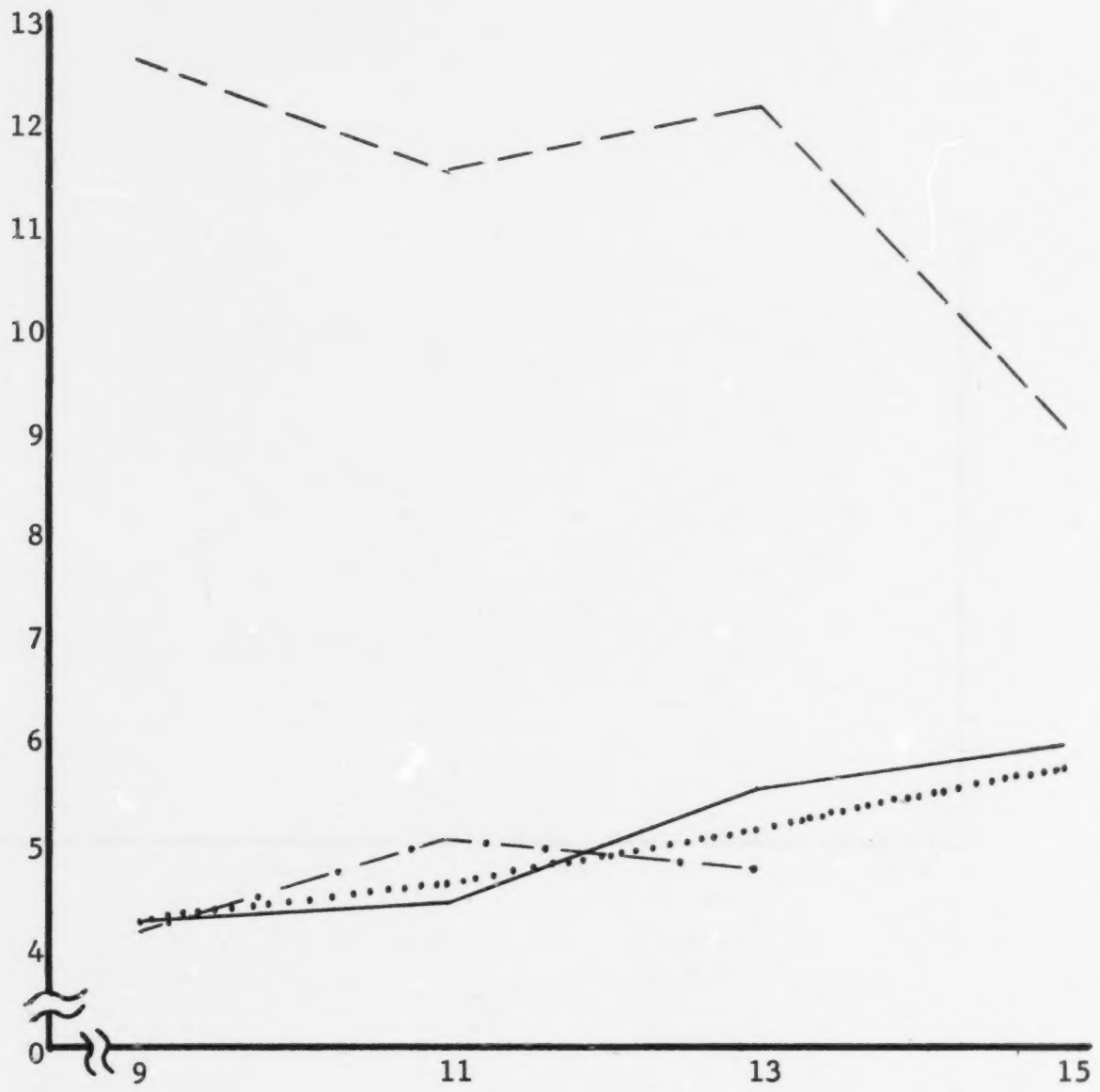


Figure 7

RP-F(M) Developmental Trend at Each CA Level

For the Various Settings

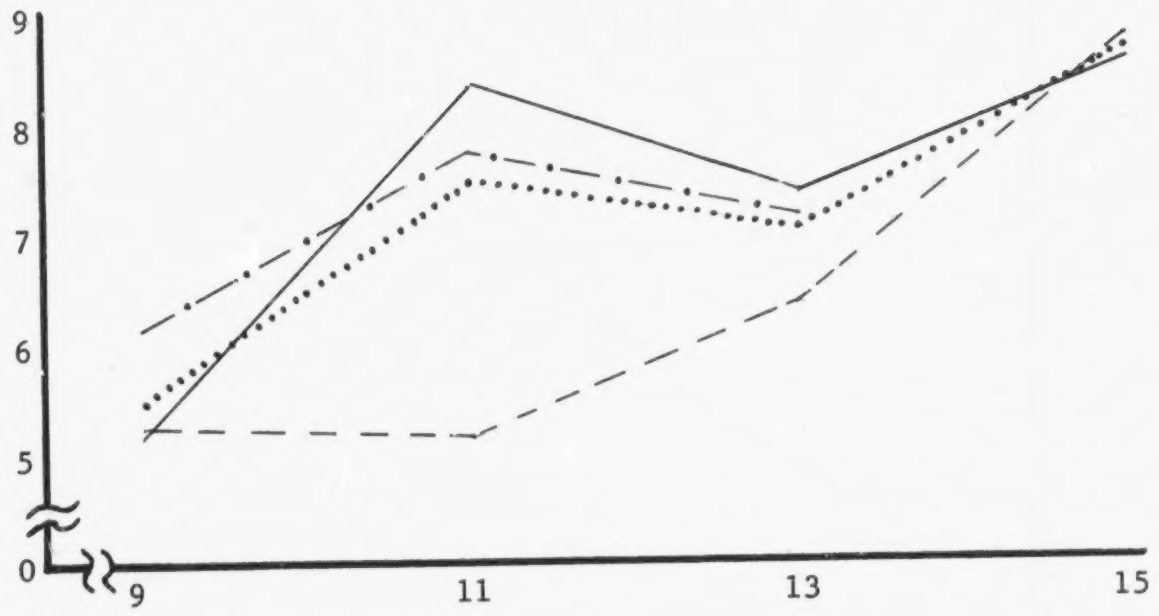


Figure 8

RGL Developmental Trend at Each CA Level

For the Various Settings

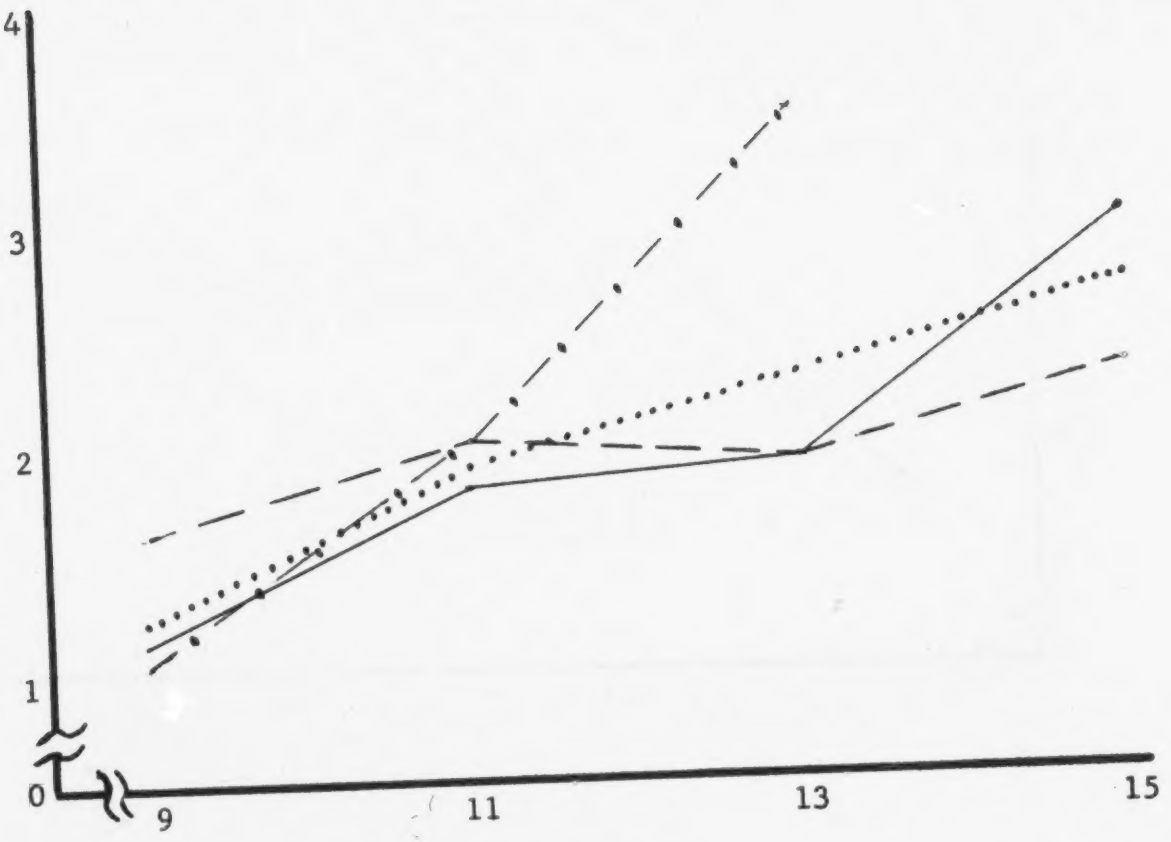
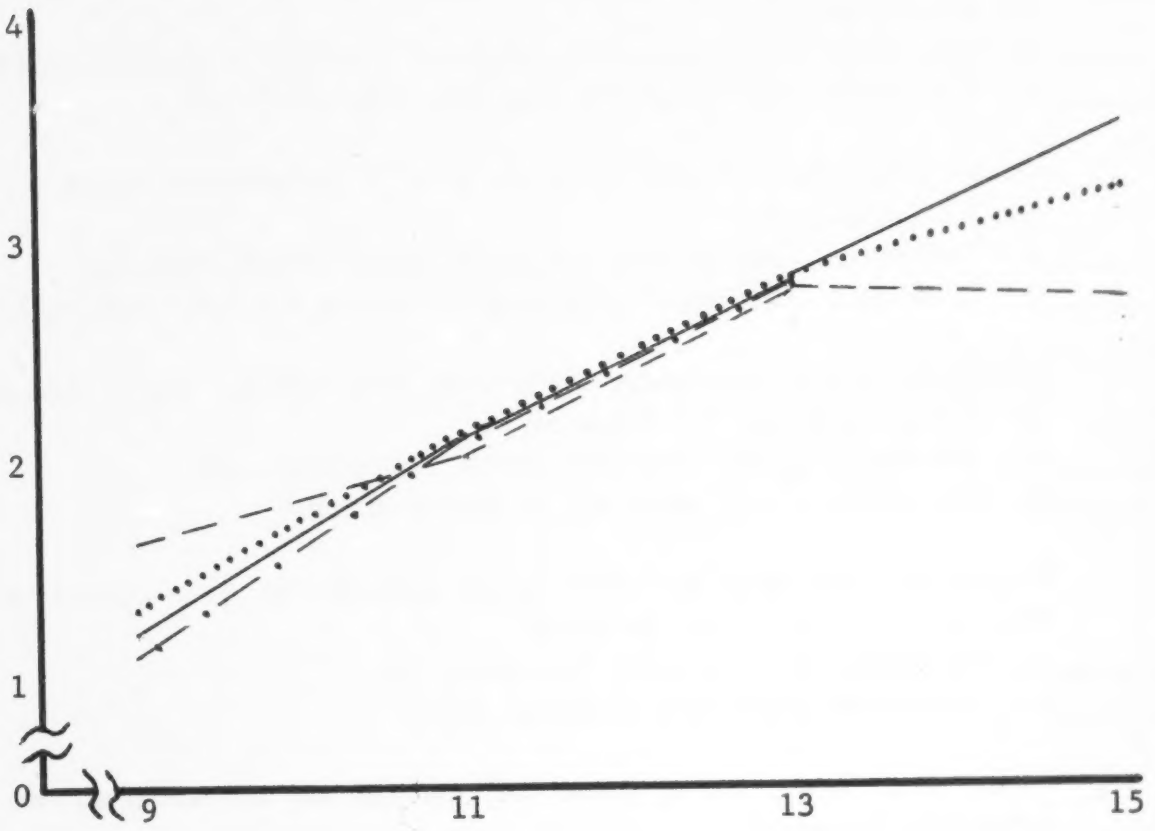


Figure 9

AGL Developmental Trend at Each CA Level

For the Various Settings



Appendix C_1

The IAR Scale

1. If a teacher passes you to the next grade, would it probably be
   _____a. because she liked you, or
I + _____b. because of the work you did?

2. When you do well on a test at school, is it more likely to be
I + _____a. because you studied for it, or
   _____b. because the test was especially easy?

3. When you have trouble understanding something in school, is it usually
   _____a. because the teacher didn't explain it clearly, or
I - _____b. because you didn't listen carefully?

4. When you read a story and can't remember much of it, is it usually
   _____a. because the story wasn't well written, or
I - _____b. because you weren't interested in the story?

5. Suppose your parents say you are doing well in school. Is this likely to happen
I + _____a. because your school work is good, or
   _____b. because they are in a good mood?

6. Suppose you did better than usual in a subject at school. Would it probably happen
I + _____a. because you tried harder, or
   _____b. because someone helped you?

7. When you lose at a game of cards or checkers, does it usually happen
   _____a. because the other player is good at the game, or
I - _____b. because you don't play well?

8. Suppose a person doesn't think you are very bright or clever.
I - _____a. can you make him change his mind if you try to, or
   _____b. are there some people who will think you're not very bright no matter what you do?

9. If you solve a puzzle quickly, is it
   _____a. because it wasn't a very hard puzzle, or
I + _____b. because you worked on it carefully?

10. If a boy or girl tells you that you are dumb, is it more likely that they say that
_____a. because they are mad at you, or
I -_____b. because what you did really wasn't very bright?

11. Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen
I -_____a. because you didn't work hard enough, or
_____b. because you needed some help, and other people didn't give it to you?

12. When you learn something quickly in school, is it usually
I +_____a. because you paid close attention, or
_____b. because the teacher explained it clearly?

13. If a teacher says to you, "Your work is fine," is it
_____a. something teachers usually say to encourage pupils, or
I +_____b. because you did a good job?

14. When you find it hard to work arithmetic or math problems at school, is it
I -_____a. because you didn't study well enough before you tried them, or
_____b. because the teacher gave problems that were too hard?

15. When you forget something you heard in class, is it
_____a. because the teacher didn't explain it very well, or
I -_____b. because you didn't try very hard to remember?

16. Suppose you weren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Is it likely to happen
_____a. because she wasn't as particular as usual, or
I +_____b. because you gave the best answer you could think of?

17. When you read a story and remember most of it, is it usually
I +_____a. because you were interested in the story, or
_____b. because the story was well written?

18. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be
I -_____a. because of something you did, or
_____b. because they happen to be feeling cranky?

The IAR Scale

19. When you don't do well on a test at school, is it
_____a. because the test was especially hard, or
I -_____b. because you didn't study for it?

20. When you win at a game of cards or checkers, does it happen
I +_____a. because you play real well, or
_____b. because the other person doesn't play well?

21. If people think you're bright or clever, is it
_____a. because they happen to like you, or
I +_____b. because you usually act that way?

22. If a teacher didn't pass you to the next grade, would it probably be
_____a. because she "had it in for you," or
I -_____b. because your school work wasn't good enough?

23. Suppose you don't do as well as usual in a subject at school. Would this probably happen
I -_____a. because you weren't as careful as usual, or
_____b. because somebody bothered you and kept you from working?

24. If a boy or girl tells you that you are bright, is it usually
I +_____a. because you thought up a good idea, or
_____b. because they like you?

25. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen
_____a. because other people helped you when you needed it, or
I +_____b. because you worked very hard?

26. Suppose your parents say you aren't doing well in your school work. Is this likely to happen more
I -_____a. because your work isn't very good, or
_____b. because they are feeling cranky?

27. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen
_____a. because he wasn't able to understand how to play, or
I -_____b. because you couldn't explain it well?

28. When you find it easy to work arithmetic or math problems at school, is it usually
_____a. because the teacher gave you especially easy problems, or
I +_____b. because you studied your book well before you tried them?

The IAR Scale

29. When you remember something you heard in class, is it usually

I +_____a. because you tried hard to remember, or

_____b. because the teacher explained it well?

30. If you can't work a puzzle, is it more likely to happen

I -_____a. because you are not especially good at working puzzles, or

_____b. because the instructions weren't written clearly enough?

31. If your parents tell you that you are bright or clever, is it more likely

_____a. because they are feeling good, or

I +_____b. because of something you did?

32. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often

I +_____a. because you explained it well, or

_____b. because he was able to understand it?

33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen

_____a. because she was more particular than usual, or

I -_____b. because you answered too quickly?

34. If a teacher says to you, "Try to do better," would it be

_____a. because this is something she might say to get pupils to try harder, or

I -_____b. because your work wasn't as good as usual?

Appendix C_2

MIARQ

Instructions:

This is not a test. I am trying to find out how kids your age think about certain things. I am going to ask you some questions and you pick the answer that best describes what happens to you or how you feel. If you want me to repeat a question, ask me. Do you understand? All right, listen carefully and answer.

Examples:

1. Which do like best
   a) apples or
   b) oranges
2. If you had a nickle what would you buy
   a) chocolate bar or
   b) lolypop

MIARQ SCALE

1. When you pass a test, is it
   +a) because you studied, or
   b) because it was easy

2. When you find it hard to understand school work, is it
   a) because the teacher did not explain it enough, or
   -b) because you did not listen carefully

3. If you can't remember a story, is it
   a) because the story wasn't good, or
   -b) because you just weren't interested

4. If your parents tell you your school work is good, is it
   +a) because your work is really good, or
   b) because they feel good

5. When you do better in school, is it
   +a) because you try hard, or
   b) because somebody helped you

6. If another child says you are dumb, is it
   a) because they are mad at you, or
   -b) because you did something dumb

7. If you lose a game that you are playing with another child, is it
   a) because he is very good at it, or
   -b) because you don't play well

8. If you do a puzzle quickly, is it
   a) because it wasn't very hard, or
  +b) because you worked on it carefully

9. When you learn quickly, is it
  +a) because you listen carefully, or
   b) because the teacher explains it well

10. If your teacher says, "Your work is fine," is it
   a) because she says that to all the children, or
  +b) because you did a good job

11. If you find arithmetic very hard to do, is it
  -a) because you didn't study enough, or
   b) because the teacher gives hard problems

12. When you forget something the teacher said, is it
   a) because she didn't explain it well, or
  -b) because you didn't try to remember it

13. If you remember a story, is it
  +a) because you were interested, or
   b) because the story was good

14. If your parents say you are acting silly, is it
  -a) because of something you did, or
   b) because they feel mean

15. When you don't pass a test, is it
   a) because the test was too hard, or
  -b) because you didn't study

16. If you win a game that you are playing with another child, is it
  +a) because you play well, or
   b) because he isn't very good at it

17. When you do poorly in school, is it
  -a) because you weren't careful, or
   b) because somebody kept you from working

18. If another child says you are smart, is it
  +a) because you are really smart, or
   b) because they like you

19. If your parents tell you your school work isn't good, is it
  -a) because your work isn't good, or
   b) because they feel bad

20. If you find arithmetic easy to do, is it
    a) because the teacher gives easy problems, or
    +b) because you study hard

21. When you remember something the teacher said, is it
    +a) because you tried hard to remember
    b) because the teacher explained it well

22. If you can't do a puzzle, is it
    -a) because you aren't good at puzzles, or
    b) because the instructions weren't good

23. If your parents say you are smart, is it
    a) because they are feeling good, or
    +b) because you did something smart

24. If your teacher says "your work isn't good," is it
    a) because she says this to everybody, or
    -b) because your work really wasn't good

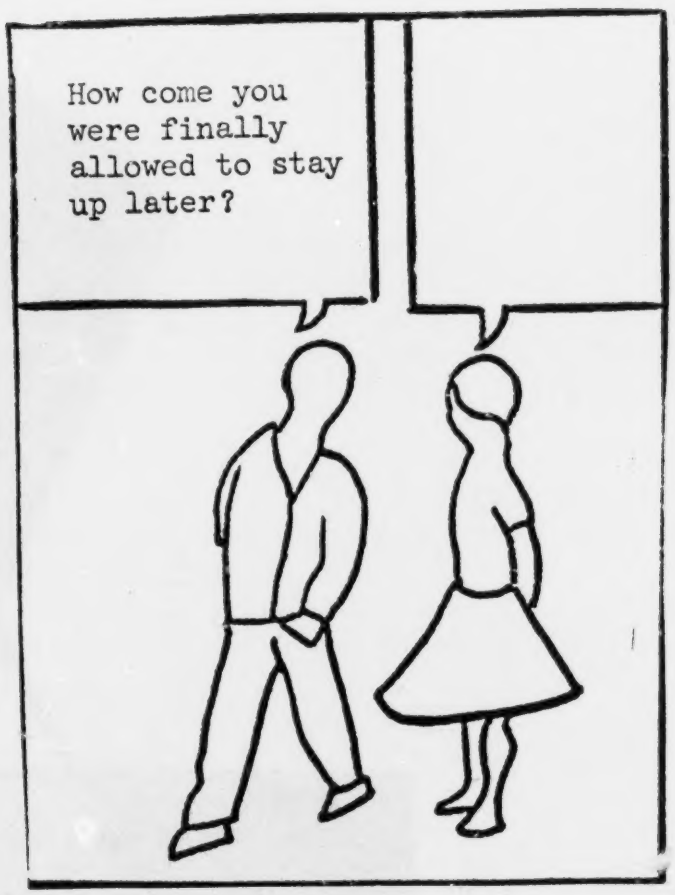
Check items

1. When you pass a test, is it
    b) because it was easy, or
    +a) because you studied

2. When you find it hard to understand school work, is it
    -b) because you didn't listen carefully, or
    a) because the teacher didn't explain it enough

Appendix D

Children's Picture Test



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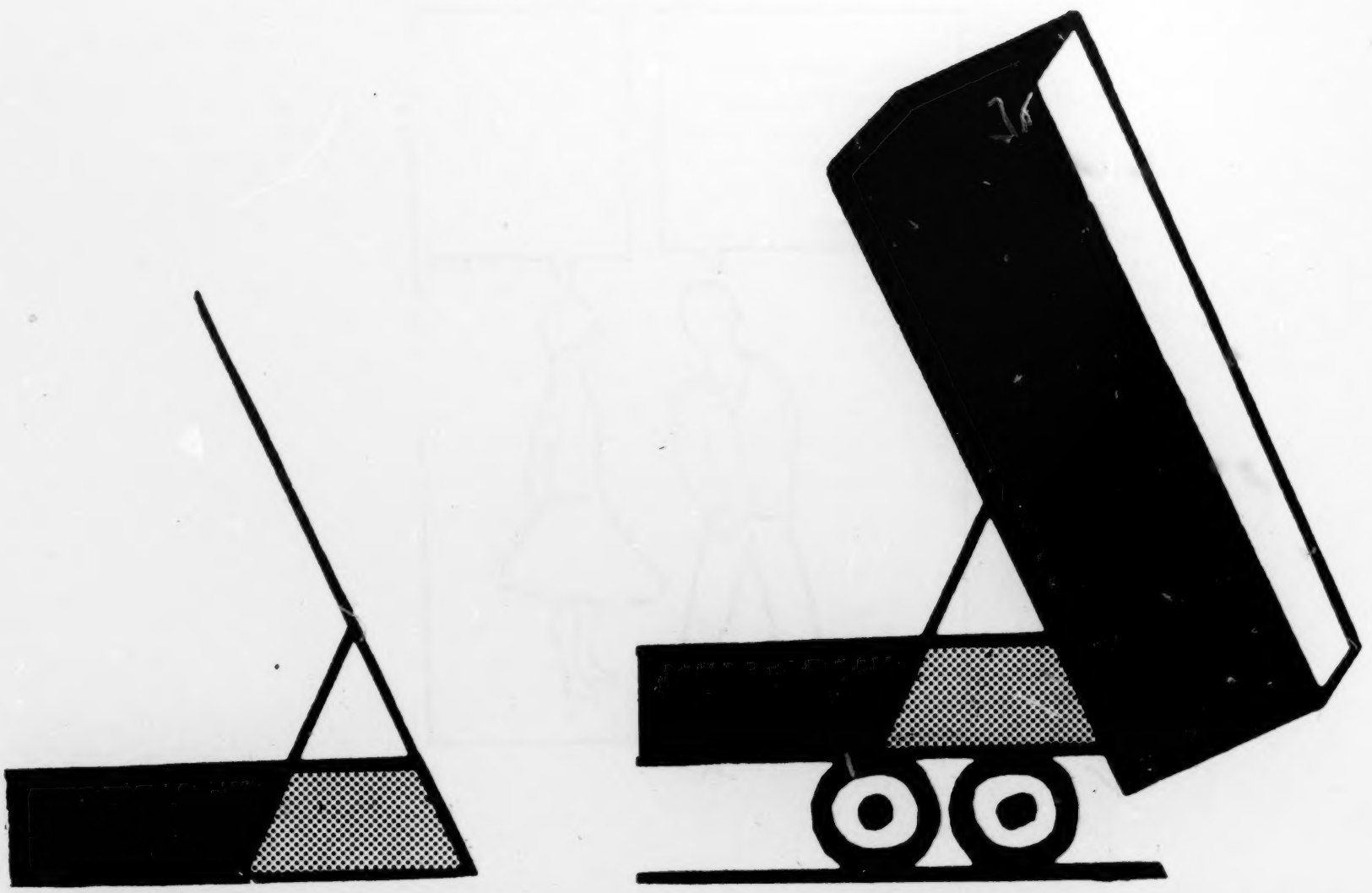
Appendix E

Children's Embedded Figure Test



Appendix F

Rosenzweig Picture-Frustration Test

Appendix C

Children's Locus of Control Scale

(Bialer - Cromwell)

Children's Locus of Control Scale

Instructions

This is not a test. I am just trying to find out how kids your age think about certain things. I am going to ask you some questions to see how you feel about these things. There are no right or wrong answers to these questions. Some kids say "Yes" and some say "No." When I ask the question, if you think your answer should be yes, or mostly yes, say "Yes." If you think the answer should be no, or mostly no, say "No." Remember, different children give different answers, and there is no right or wrong answer. Just say "Yes" or "No," depending on how you think the question should be answered. If you want me to repeat a question. ask me. Do you understand? All right, listen carefully, and answer "Yes" or "No."

1p. When somebody gets mad at you, do you usually feel there is nothing you can do about it?

2f. Do you really believe a kid can be whatever he wants to be?

3f. When people are mean to you, could it be because you did something to make them be mean?

4f. Do you usually make up your mind about something without asking someone first?

5f. Can you do anything about what is going to happen tomorrow?

6f. When people are good to you, is it usually because you did something to make them be good?

7f. Can you ever make other people do things you want them to do?

8f. Do you ever think that kids your age can change things that are happening in the world?

9f. If another child was going to hit you, could you do anything about it?

Children's LC Scale

10f. Can a child your age ever have his own way?

11p. Is it hard for you to know why some people do certain things?

12f. When someone is nice to you, is it because you did the right things?

13f. Can you ever try to be friends with another kid even if he doesn't want to?

14f. Does it ever help any to think about what you will be when you grow up?

15f. When someone gets mad at you, can you usually do something to make him your friend again?

16f. Can kids your age ever have anything to say about where they are going to live?

17f. When you get in an argument, is it sometimes your fault?

18p. When nice things happen to you, is it only good luck?

19p. Do you often feel you get punished when you don't deserve it?

20f. Will people usually do things for you if you ask them?

21f. Do you believe a kid can usually be whatever he wants to be when he grows up?

22p. When bad things happen to you, is it usually someone else's fault?

23f. Can you ever know for sure why some people do certain things?

Note: The letter "f" following item number indicates that an answer of "Yes" is scored as internal control. The letter "p" signifies that an answer of "No" is scored as internal control.

Reverse items

a) 2p. Is it impossible for a person to be whatever he wants to be?

b) 3p. Are people mean to you even if you do not do anything to make them be mean?